

# Dechlorination of Potable and Super-chlorinated Water

Arlington County

Department of Environmental Services

March 18, 2022



**ARLINGTON**  
VIRGINIA

# Agenda

- Why we need to dechlorinate
- Regulations / Arlington's Standards and Specifications
- Dechlorinating potable water
- Managing super-chlorinated water
- Construction Manager / Contractor Responsibilities
- Conclusion



# Introduction

- Super-chlorinated or potable water
  - Contain chlorine or chloramines at various levels
  - Toxic to fish and other aquatic life
- Previous discharges of potable and super-chlorinated water resulted in fish kills
- Enforcement Action taken by VA DEQ
  - Notice of Violation – Corrective Action required
  - County must take actions to safeguard against future incidents
  - Focus on preventable discharges
  - Operational changes



## NEW Municipal Separate Storm Sewer System (MS<sub>4</sub>) Permit

- Some non-stormwater discharges to the storm drain system and streams are allowed
- *The following non-stormwater discharges are authorized unless the State Water Control Board, or the permittee determines the discharge to be a significant source of pollutants to surface waters:*
  - water line flushing, managed in a manner to avoid an instream impact
  - discharges from potable water sources



# When to Dechlorinate

- When discharge is going to storm drain system and/or stream
  - Using a fire hydrant
  - Flushing a service
  - Pumping out a trench filled with potable water
  - Need to do best to dechlorinate

## **Unpreventable discharges:**

*Water from a broken main (discharge from initial break and prior to shutting water off) is exempt*



# DES Construction Standards and Specifications

- Applicable updated sections
  - Section 02550 - WATER MAINS AND APPURTENANCES
  - PART 3 – EXECUTION: 3.4 Construction Standards
    - L. Discharge of chlorinated water

<https://arlingtonva.s3.amazonaws.com/wp-content/uploads/sites/38/2020/09/DES-Construction-Standards-and-Specifications.pdf>



# Chlorine Concentrations

- Potable Water

- Generally, between 0.2 and 4.0 mg/L total chlorine

- Super-chlorinated Water

- Generally, >25 mg/L total chlorine
- Can be much higher
- Used to disinfect water mains before they are placed into service



# Dechlorinating Planned Discharges of Potable Water

- Water flows over / through LPD-CHLOR tablets (sodium sulfite)
- Chlorine/chloramines react with sodium sulfite
- With care, the resulting compounds are able to flow to the storm system





# Safety / PPEs

- Handling Chlorinated or Super-chlorinated Water?
  - Eye protection
  - Nitrile gloves
  - First aid kits with eyewash bottles
- In your eye?
  - Use eyewash
  - Go to nearest Urgent Care
- Talk to you supervisor or Elfreda Edwards (x6403) about other safety concerns



# Examples of Standard Equipment Used to Dechlorinate Water

**Pollardwater.com**

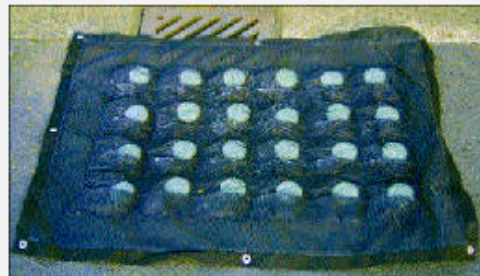
## Emergency Dechlorination Mats and Bags



Great for emergencies or "measures of last resort."

In a main break situation, chlorinated potable water may be flooding to where it will reach sensitive receiving waters.

First responders can use the Dechlormats to achieve significant dechlorination until the situation can be brought under control.

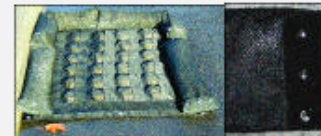


Dechlormat has 24 pockets and 8 heavy duty grommets that can be tent staked into the ground to keep the bag in place.

Great for water main breaks and emergency dechlorination of water. Make them part of your BMP's!



Dechlorstrip has 6 pockets and 2 heavy duty grommets - great for dechlorinating potable water where no other methods are available.



[Go to Vita-D-Chlor Tablets page](#)

[Dechlorination Guide](#)



# Continued - Standard Equipment Used to Dechlorinate Water

## LPD-250 & LPD-250A Dechlorinating Diffusers

use with chlorine/chloramines of 4 ppm or less

For newly disinfected water mains use the [COMBO KIT](#) with the LPD-250 for Dechlorinating up to 300 ppm chlorine



- Traps Debris
- Diffuses Discharge
- Neutralizes Chlorine and Chloramine in Potable Water
- Connects to Hydrant or Fire Hose
- Flow Measurement Pitot
- Visual Tablet Consumption
- Adaptable for Low and High Volume Flow



**VIDEO BELOW**

[LPD-250 in Service Video](#)

- [Dechlorination Guide](#)
- [Pitots Sold Separately](#)
- [Chlorine Testing](#)
- [Low Flow Inserts](#)



Original LPD-250



New Aluminum Body - Only 17 lbs



# Storage of Dechlor Tablets



- Only one bucket per truck
- Keep lid on
- Keep tablets dry
- Shelf life = One Year



# Flushing Potable Water 1-inch and Smaller Water Services



# Flushing Potable Water Fire Hydrants – Basic Set Up



Ten tablets  
Thirty Minutes

LPD-250 Diffuser – NOT attached directly to the Fire Hydrant



# Flushing Potable Water: Fire Hydrants – Basic Set up

LPD-250A – Lighter than the LPD-250

Use when need to attach directly to fire hydrant



Gauge to Measure Flow



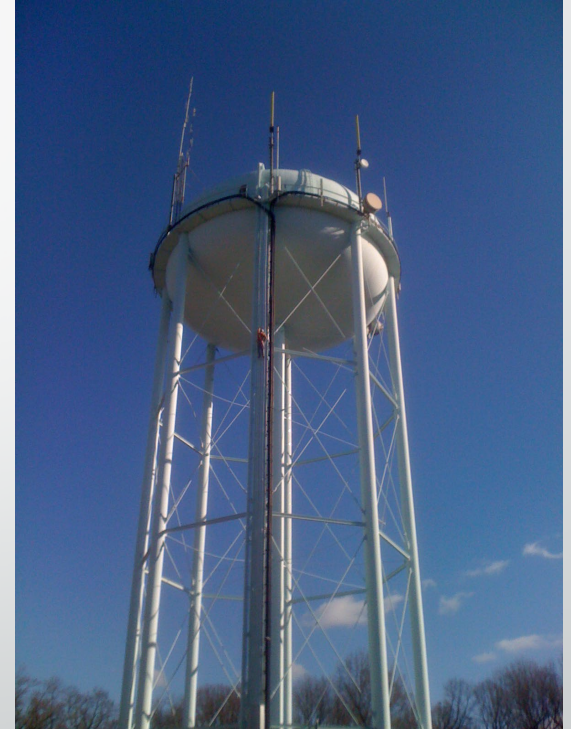
# Discharging from Blow-offs and Pumps





# Rules of Thumb – Draining Water Mains

- **For 12-inch and smaller mains**
  - More than an hour to drain?
  - Call the Water Distribution Supervisor at x6555.
- **For 16-inch and larger mains**
  - Check with the Project Engineer for approximate drain time.
- **If after ~50,000 gallons, the potable water may need to be discharged to the sanitary sewer following same procedures as for super-chlorinated discharges.**



## Bottom Line

- If it's taking longer than expected to drain a main ...work with Valve Crew to shut the water off
- When dealing with **planned** potable water discharges... at minimum use a diffuser or multiple mats by a storm drain inlet

Dechlorination – It's not just for the Valve Crew anymore



**Disposing / Dechlorinating  
SUPER-CHLORINATED  
Water**



# Super-chlorinated Water: Discharge to Sanitary

- **Plan Requirements:**
  - A **map** showing the receiving manhole
  - Anticipated **rate and duration of discharge**
  - Plans for **air gap**
  - List of **methods/equipment**
  - Accommodations to **maintain traffic**
- **Pre-Approved** by WSS Engineering and WPCP
  - Gerado Perez– x3677
  - Ten (10) business days prior to planned discharge



# Super-chlorinated Water Discharge to Sanitary

## FIVE Key Points:

1. Air gap MUST be maintained
2. Cannot cause surcharge to sewer system service
3. *Maximum 200 GPM flow*
4. Clean and spray or swab new pipe, fittings, hoses, and valves with a **minimum 1 percent solution of chlorine** just before installation and connection to water distribution main
5. Inspector must be onsite at the beginning of the discharge operation with the contractor monitoring the receiving manhole




# Determining the Flow Rate

- Contractor is responsible for operation
- There are gauges that can measure flow at the end of the hose

Search Pollardwater.com

**Pollardwater.com**

### Quick Disconnect Pitot Gauge



The hand held pitot tube is one of the most efficient and accurate methods of measuring water discharge from hose nozzles, hydrants or other type open orifices.

This Pitot utilizes a quick disconnect fitting for mounting the gauge. Constructed from brass and copper, and fully chrome plated. An air chamber is machined into the brass handle negating any need for a bleeder to be incorporated into the tube design.

Furthermore, the air chamber serves as a damper to hold the gauge indicator needle as steady as possible for a more accurate reading.

**Kit comes complete with quick Disconnect Pitot, One Gauge and case. Case will fit 2**



# How Long to Flush Mains?

Pipe Diameter (inch)	Volume per 100 ft of Pipe (gallon)	Approximate Time for Flush per 1000 ft Pipe (min)
6	150	15
8	260	30
12	590	45
16	1040	60
20	1630	Check with Proj. Eng
24	2350	Check with Proj. Eng
36	5290	Check with Proj. Eng
48	9400	Check with Proj. Eng

Based on 200 GPM flow rate



# Alternative Means for Handling Super-chlorinated Water

- Filling a Tank/Tanker Truck
  - Drive truck to receiving sanitary sewer manhole
  - Number of trips calculated in advance
- Other methods may be discussed at pre-construction meeting and shall be approved by Arlington County prior to implementation





# Construction Manager/Contractor Responsibilities

## Prior to Notice to Proceed

- The contractor must read
  - Memo to Industry on Dechlorination
  - Review these slides (will be available [online](#))
- Provide the **Construction Manager** with the signed acknowledgement

Information on “Discharging Chlorinated Water” website:

<https://www.arlingtonva.us/Government/Programs/Water-Utilities/Discharging-Chlorinated-Water>

ARLINGTON VIRGINIA DEPARTMENT OF ENVIRONMENTAL SERVICES  
Water, Sewer and Streets Bureau  
4200 29<sup>th</sup> St S, Arlington, VA 22206  
TEL 703-228-6570 FAX 703-228-6585 [www.arlingtonva.us](http://www.arlingtonva.us)

**Acknowledgement of Receipt Dechlorination of Policies and Procedures**  
**(Contractor to sign and return)**

This is to acknowledge that I have received a copy of the Dechlorination Policies and Procedures. These procedures describe important precautions regarding dechlorination procedures to help ensure the protection of water quality and compliance with the MS4 permit. I understand that a release of chlorinated water as a result of not using proper procedures may result in a violation of the MS4 permit. I also understand Arlington County may periodically change these policies and practices and it is my responsibility to ensure I am aware of the most recent update. (Policy is available at : [www.\\_\\_\\_\\_\\_](#).)

Initial \_\_\_\_\_

My signature below certifies that I have received the Policies and Procedures Manual and agree to abide by its provisions during my work within Arlington County

Contractor Signature: \_\_\_\_\_

Print Name: \_\_\_\_\_ Date: \_\_\_\_\_



# Prior to Flushing Super-chlorinated Water

- The Contractor MUST submit a plan to be approved by Construction Manager
  - Minimum of **ten (10) business days** prior to planned discharge
- Construction Manager must be on-site prior opening any valves

 DEPARTMENT OF ENVIRONMENTAL SERVICES  
WATER, SEWER, AND STREETS BUREAU  
4200 28TH STREET SOUTH, ARLINGTON VA 22206  
TEL: 703-228-6570 FAX: 703-228-4565 TTY: 703-228-4811  
WWW.ARLINGTONVA.US

**Flushing and Discharging Super Chlorinated Water**

Project Name:		Contract Number:	Exhibit:
Contractor:		Neighborhood:	Phase:

Methods and equipment to be used:

Plan to prevent cross-connection:

Accommodations to maintain vehicular and pedestrian traffic:

Location 1:		Water Source:	Address (attach map if necessary):
Anticipated Rate of Discharge:	Proposed Date:	To Sanitary MH #	Address (attach map if necessary):
	Start Time:		
	End Time:		

Location 2:		Water Source:	Address (attach map if necessary):
Anticipated Rate of Discharge:	Proposed Date:	To Sanitary MH #	Address (attach map if necessary):
	Start Time:		
	End Time:		

Location 3:		Water Source:	Address (attach map if necessary):
Anticipated Rate of Discharge:	Proposed Date:	To Sanitary MH #	Address (attach map if necessary):
	Start Time:		
	End Time:		

Note:  
Engineer / Construction Manager must be present before the starting of any discharge into the sanitary sewer system. 48 hours advance notice is required.

Plan Submittals Approved by:

Signature	Name	Date
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Field Inspection Performed by:

Signature	Name	Date
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# Prior to Flushing Super-chlorinated Water

- The Construction Manager **MUST**
  - Check with Water Sewer Engineering if any concerns re: discharge plan
  - Be onsite prior to any discharge
  - **Physically check that manhole is sewer not storm**
  - Witness flow (verify not high)
  - Test to ensure that after the flush, the water is <4.0 mg/L (ppm)

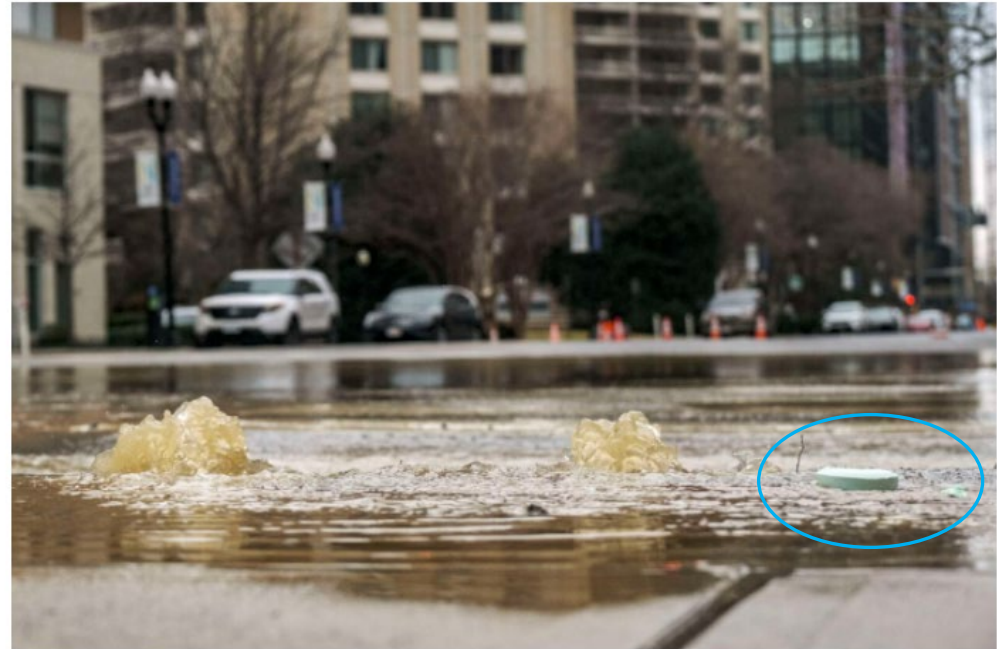


# Be Prepared

- Have dechlor equipment available even if you don't think you will need it

## **UPDATED: Busy Crystal City intersection closed after water main break, possible sinkholes**

ARLnow.com Today at 8:55am



Water main break in Crystal City (staff photo by Jay Westcott)



# Report Issues

- Unplanned or unauthorized discharge to storm drain system or stream, fish kill, and/or pollution in stream?
  - Call Diana Handy at 703.228.0772 or 571.221.6174
- Unplanned discharge to sanitary sewer?
  - Call WPCP 24-hour shift supervisor at 703.585.6851



# Other things to consider

- Be mindful of what's DOWNSTREAM of your discharge point!
  - Avoid flooding and damages to private property
  - Ensure that storm drains are unclogged
  - Pick up tablets and equipment before you leave the site – **remember tablets are chemicals!**



# Thanks for Making a Difference



24 Hour Emergency Number: 703-228-6555

